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ABSTRACT

An informal investigation of the use of computers at Delta College (DC) in Michigan revealed reasonable use of computers by faculty in disciplines such as mathematics, business, and technology, but very limited use in the humanities and social sciences. In an effort to increase faculty computer usage, DC decided to make computers available to any faculty members who wanted them. Because of the costs involved in purchasing computers for each of Delta's 210 faculty members, DC implemented the faculty computer usage project in phases. A committee was established by the executive vice-president and co-chaired by the assistant to the president and a faculty member with some computer experience. The chief financial officer determined that, at a cost of $3,000 per faculty office, over $600,000 was needed to successfully complete the project. Only $75,000 was available for the first year of funding, however. The faculty committee determined that faculty could choose from IBM/IBM-compatible or Macintosh computers. In the first year, 75 faculty applied for computers for their offices, including 18 who considered themselves computer novices and 57 who categorized themselves as computer literate. As the college only had enough funding for 25 computers, a number generator was used to order the applicants randomly. During the second year, 57 faculty members applied, and all were able to receive a computer. The college retained ownership of the computers and maintained the warranties and service contracts. As time passed, the price of computers went down, and the school was able to afford more powerful computers and some laser printers or color ink jet printers. (JMC)

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COMPUTERS FOR THE FACULTY:

HOW, ON A LIMITED BUDGET

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A Paper Presented at the League
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"COMPUTERS FOR THE FACULTY - HOW ON A LIMITED BUDGET?"

Hal Arman, Assistant to the President
and
John Kostoff, Professor, Delta College

My task is to explain the philosophical and theoretical base for a decision our College made almost three years ago to equip the offices of every faculty who wanted one with a personal computer. John will tell you how we did it and share with you some of the issues which need to be decided if you are thinking about heading down that same trail.

Ten years ago this year, IBM brought out their first PC. While Apple and other manufacturers had earlier products on the market, the entrance of IBM is a handy milestone for tracing the history of computers going into the hands of the masses, rather than just a few computer jockeys who seemed to delight in keeping the secrets of operating the big mainframe to themselves, and making everyone else feel a little dumb in the process.

What has happened in those ten years? Several things:

- We have spent over two billion dollars on hardware in elementary and secondary schools alone in the last decade.
- 2.5 million computers have been installed in elementary and secondary schools.
- The ratio of students to computers is estimated in elementary and secondary schools to be as low as 19-1, or more likely 30-1.
- Much less collective national data is available for colleges and universities, but it does appear that the ratio of computers to students is somewhat better, but varies between types of institutions and whether students have access to them. (Chart 1 & 2)

A number of authors have pointed out, however, that at

Chart I

RATIO OF STUDENTS TO DESKTOP COMPUTERS*

(Means By Campus Type)

	Students to *all* computers	Students to *public* computers
Public Research Universities	10.4	46.0
Private Research Universities	12.4	46.2
Public four-year colleges	14.7	47.3
Private four-year colleges	13.4	51.4
Public two-year colleges	34.5	45.6

*Defined as personal computers and workstations

Source: EDUCOM Review Summer 1991

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COMPUTERS IN CLASS

Time that students spent on computers devoted to various subjects.

Learning Math	14%	Learning Science	6%
Word Processing	14	Learning social studies	5
Keyboarding	13	Business education	5
Learning English	13	Industrial arts	3
Programming	8	Fine arts	2
Recreational Use	8	Learning foreign languages	1
Tools (i.e., spreadsheets)	7	Other	1

Source: Center for Social Organization of Schools, John Hopkins University

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all levels of education, the introduction and impact of computers over the last ten years is much less than was anticipated (or in some cases feared). Undoubtedly, one reason for this is the enormous cost of purchasing hardware and software for students and faculty. Another factor is the relatively slow introduction of commercial software designed for and useful in education as recently described in an article in The Chronicle on Project Synergy. A third factor is the development time the computer companies have taken to simplify the operations of computers to make them truly user friendly.

Where are computers being used? (Chart 3) Note the very low levels of usage in such areas as social science and fine arts, despite the availability of some excellent commercial software.

As we at Delta College looked at the impact of computers on our institution, we noted the same things as the data previously described: Reasonable use of computers in such disciplines as mathematics, business and technology, but very limited, if any use at all, in the humanities and social sciences.

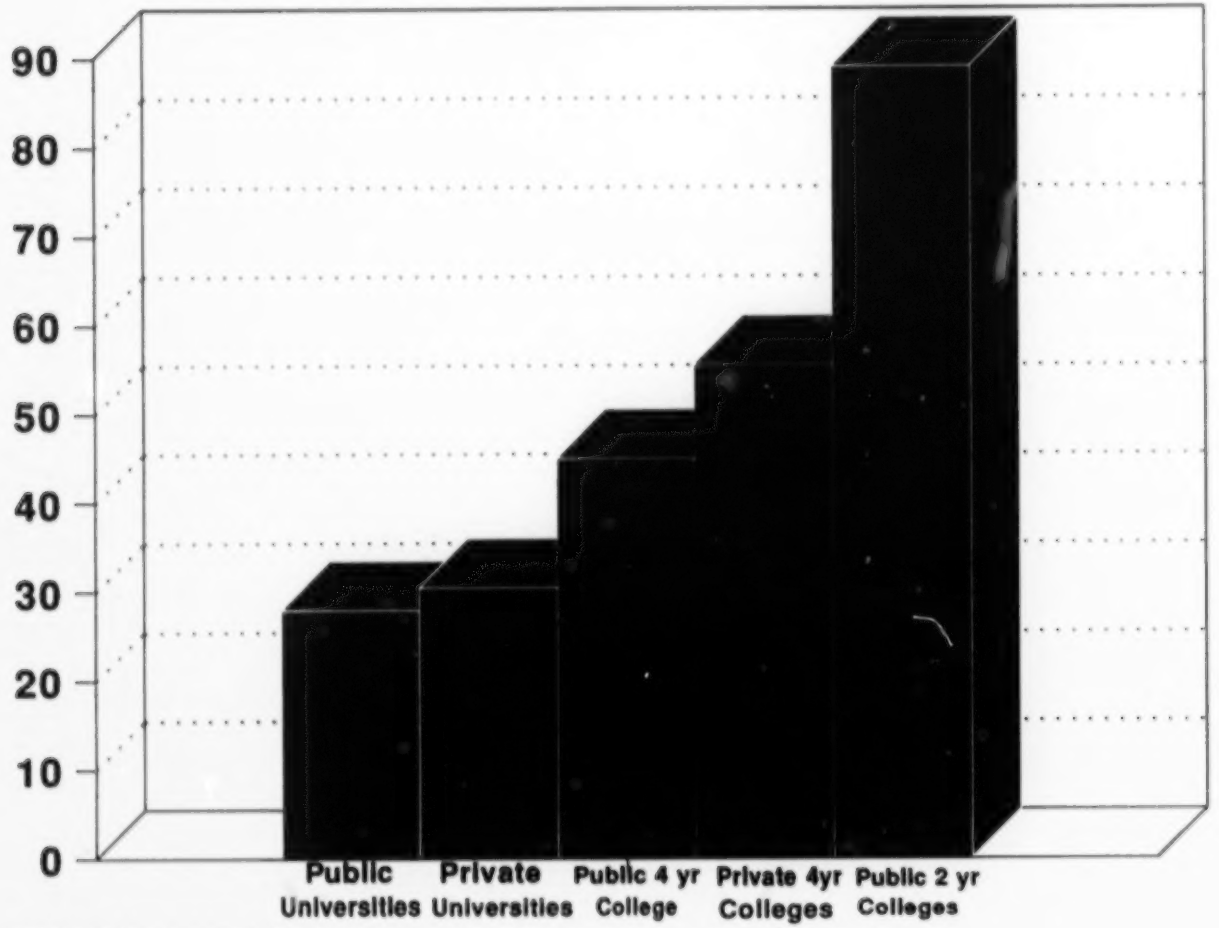
If you accept the idea that the computer is a valuable teaching tool, as we did, the issue becomes, how do you expose non-computer faculty users to the computer, as well as how do you raise the proficiency level of those who are currently interested and somewhat involved in computer utilization?

One easy answer is to be critical of faculty who have not accepted the increasing role of computers in modern society. To call them traditionalists, resistant to change, trying to protect their jobs, etc. We also rejected the idea of simply offering classes or training to faculty in hopes they would get interested, without having ready access to a computer to practice on.

After a great deal of thought, we concluded that the

COMPUTERS ON CAMPUS IN LABS &CLASSROOMS

Percentage (percentage of total institutionally owned computers located in public access labs, classrooms, and clusters by campus type)



SOURCE: EDUCOM Review Summer 1991

single most important step for increasing computer usage we could take is to make computers immediately and constantly available to faculty in a setting that lets them experiment and learn without having other colleagues present to see mistakes and false starts. In short, to put a PC in every faculty member's office who wanted one. We discovered after reaching that conclusion that others had followed that same thought and arrived at the same conclusion. For example, the National Education Association has proposed the same thing for all faculty, at every level of instruction. But the strongest rationale for making computers available for faculty we found is contained in a review of the computer industry by two software manufacturers. They said, looking at the strategies the industry used to impact education, "the more we talk to teachers the more we realize the astounding political naivete in our industry. We (the computer industry) took a technology, attempted to inject it into schools, and thereby hoped to revolutionize education. The Rand Corp's study of innovations in education said that innovations will fail if they don't do two things: 1)Take into account the complex social structure of education, and 2) it must put the teacher in the dead center of the loop."

Or a recent report from Columbia University which described "accomplished teachers" and concluded with this statement, "These accomplishments cannot be realized on a wide scale unless there is enough technology for teachers to have regular access, there is ample support and time for teachers to learn how to use it and plan for its use, and there is a structure and culture in which teachers are encouraged and expected to take a professional and experimental approach to their work."

If getting access to computers is critical for faculty, how do you do it? If I asked each of you if your college could afford this year to put computers on the desk of every

faculty member, how many would raise their hands? But if we were meeting five years ago, how many would? How about last year? How about two years in the future?

The point is, almost no college can afford to do this all at once.

What we would like to describe to you is a way to get computers in faculty offices in phases--without having the phases create minor problems for you.

The question becomes: "How do we put computers in faculty offices?"

What kind of computers do we get?

Do the faculty decide on the type of computer they will receive? At Delta, we have 210 faculty. We can't afford to install 210 computers immediately.

How about software?

How about printers? Will the computers be equipped with printers or will they be shared?

What process will be used to determine which faculty get computers first?

And even then, who will own and service the computers?

How about specialized computer needs?

At Delta College, a committee was set up by the executive vice-president co-chaired by two people -- the assistant to the president and a member of the faculty with some computer experience. The other members of the committee were faculty from different departments, such as English, Mathematics, Business, Humanities, Political Science, and Technology. (I might note that it is important that faculty have a major say in decision making process, especially if it affects them directly.)

We had to find out from our chief financial officer how much the school could afford each year to buy computers. If we assumed approximately $3000 per faculty office, then we are talking about over $600,000 for this project. There was some millage money that was earmarked for equipment and maintenance, which we tried to tap into. We found that we could obtain about $75,000 the first year, but we realized that it would take too long to supply 210 computers at this rate. By some urging from the committee we were able to convince the administration that we needed a much larger amount for the second year.

We had to find out what types of computers would be most appropriate and compatible for use in networking and exchange of data. It was decided by the committee that the faculty could choose from the following two types of computers:

1) IBM or IBM compatible (MS Dos)

2) Macintosh

These seemed to be the most "obvious" choices because of the availability of software for educational use. (We felt that we couldn't support more than two systems.) Since we already had some software site-licenses on our campus and because some of the computers came bundled with software, the software problem became partially solved. We would make sure that every computer would have at least one word processor (Word Perfect was the one that Delta already had as a site license) and a spreadsheet. Microsoft Works was chosen for the Macintosh computers. A screen saver and a virus detector were also included.

The printer problem: It was decided after much discussion that each computer would be equipped with a printer (24 pin Panasonic for the IBM's and ImageWriter II's with the Macintosh's). We felt that we should keep the number of different printers to a minimum to avoid incompatibility problems. We realized, of course, that if our campus becomes networked with some sort of backbone, that the computers could also access laser printers in the near future.

Now the BIG question!! How do we start to provide the equipment?

Who is first? Do we go by seniority? Do we go by giving priority to those who know most about computers and who use them most in their daily work? How about those who know little about computers but want to learn? Well, there was much disagreement on how to proceed here, but after a lot of blood-letting, it was decided to go to a random selection process, making sure that the same proportion of those who were novices got computers as those who were computer literate. (Categories I and II). We then requested that all those who were interested in having a computer in their office, send a memo to the committee stating which category they felt they belonged to and how they thought they would use the computer.

The first year 75 faculty applied. We used a random number generator to order them in random order. As mentioned before, the budget of the school had only enough money to provide 25 computers for the faculty. The 25 members of the faculty were notified of their selection and a time was set to let them see their options as to the type of computers that were available. It turned out that of the 75 faculty, 18 categorized themselves as Category I and 57 as Category II so that 6 of the 18 novices received computers and 19 of the 57 computer literate faculty received them (1/3 of each Category). By the way, most of them chose IBM or IBM compatibles and about seven of them chose the Macintosh.

A comment here: I cannot stress too strongly the importance of the faculty deciding on this strategy to determine who will and who will not receive a computer. When there were complaints that the method was not fair, who better to tell those faculty who didn't get one than a faculty committee!

The second year we had about 57 faculty apply. Since we had some millage money earmarked for equipment and maintenance, we were able to supply all 57 with computers.

It was determined by the committee that the school would retain ownership of the computers. The school would also do the servicing of them through warranties and maintenance contracts. The faculty could take the computers home only for vacation periods after written permission.

The problem of specialized uses came up. A few faculty wanted to have lap-top computers, which the committee felt was inappropriate, because this would defeat the concept that these computers were to be basically for offices, not for home use. However, one member of the faculty who made it in the first group of 25 was able to convince the executive vice president that he needed for his classroom use a portable computer. But the cost would be over $1000 more than the $3000 allotted. So a deal was struck with the executive vice president that the individual faculty member would pay the additional dollars and then could obtain the portable computer, but the school would still have 100% ownership of the computer. This "deal" seemed to satisfy all concerned.

Through other sources, the ten division chairs had already been supplied computers through other funds. So, at this point, we have been able to supply over 90 computers in faculty offices. We are hoping to provide the remaining 120 computers in two or three more years. Fortunately, as time passed, the price of computers went down, so we were able to offer more powerful computers and some laser printers or **color** ink jet printers.

We have not as yet fully addressed the problem of the cost of a network of our total campus. The costs right now sound very expensive ($1,000,000).

Evaluation has not yet been addressed either. We are finding out that many faculty are learning from their colleagues how to do certain things with their software. It may be that it is too early to start asking for detailed information on what is being done on their computers.

In summary, I may repeat myself here, but if I were to give advise to you in general, I would say:

Set up a committee made up mainly of faculty members, possibly co-chaired by a faculty member and a fairly high ranked administrator like.....

Let them do the work of determining the needs of the institution and what would be the best types of computers and printers to use on your campus.

If you don't have a half million or more laying around, encourage them to find a fair way, such as the method we chose, to determine who receives a computer the first year and in the future.

We certainly do not have all the answers. What we did and are still doing seems to work on our campus. If any of you here today have any other suggestions concerning this concept, please let us know.

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